



Machakos University College

(A Constituent College of Kenyatta University)

University Examinations 2013/2014

SCHOOL OF ENGINEERING

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

Diploma in Building and Civil Engineering

Year 3

Construction Management II

Estimate & Costing II

Date: 28/3/2014

Time: 3 hours

Instructions to Candidates

- (i) You should have the following for this examinations
 - Answer booklet
 - Scientific calculator
- (ii) Attempt four questions, choosing the question from each section and any other one question from any section.
- (iii) Maximum marks for each part of a question are as shown

SECTION A: ANSWER TWO QUESTIONS

1. (a) Explain the following documents as used in the supply of materials on a construction site
 - (i) Advice note
 - (ii) Delivery note
 - (iii) Invoice
 - (iv) Requisition
 - (v) Order(10 marks)
- (b) Explain four control measures that need to be taken in order to minimize pilfering and theft of materials as site (2 marks)
- (c) Outline two roles of each of the following.
 - (i) Quantity surveyor
 - (ii) Clerk of works(2 marks)

2. (a) Stage four advantages of critical path method of planning. (4 marks)
- (b) The table below shows the activities of a project.
- (i) Draw a vertical patch diagram indicate the cuticle patch
- (ii) Indicate the float in each activity and show the project duration. (16 marks)

ACTIVITY	DURATION
1 -2	3
1 -3	2
1 - 4	4
2 - 4	2
2 - 5	4
3 - 4	1
4 - 5	0
4 - 6	2
5 - 6	2

3. (a) (i) Outline what is likely to happen if a site is inefficiently planned. (4 marks)
- (iii) Identify five preliminary items to be considered when planning a site layout.
- (b) Describe the three stages of planning during construction process. (12 marks)
4. (a) Outline five factors to consider when choosing a material supplier. (5 marks)
- (b) Explain the responsibilities of the following personnel in a pre-tender planning meeting.
- (i) General Manager
- (ii) Contracts Manager
- (iii) Planning Engineer
- (iv) Buyer
- (v) Office Manager
- (vi) Job Estimator (12 marks)
- (c) Enumerate the purpose of a site visit report. (3 marks)

SECTION B: ANSWER TWO QUESTIONS

5. (a) Define the term preliminary as used in estimating and costing (2 marks)
- (b) Using data appendix 'A' price preliminary items
- (i) Water for the works
- (ii) Site foreman (16 marks)
- (c) State four elements that can considered in estimating and costing. (2 marks)
6. (a) State eight elements that are considered in calculating cost of owning the plant. (4 marks)

- (b) Outline two methods used in calculating depreciation of a mechanical plant. (4 marks)
- (c) A mixing machine costs ksh.480,000 and has a scrap value of Ksh.100,000 and has a useful life span of 4 years. Calculate its yearly depreciation cost and the rate of the plant at beginning of every year using the sum of number of years method. (4 marks)
- (d) A mechanical plant costs Ksh.5,000,000. The plant has a lifespan of 4 years. The salvage value of the plant is Ksh.1,500,00. Insurance @ 5% of initial cost, annually interest @ 15% of the initial cost, Taxes @ 10% of annual depreciation, maintenance @ 20% of annual depreciation. Calculate the annually cost of the plant. If the plant works 2300hrs annually. Use the straight line method of depreciation.. (8 marks)
7. Using the given data in appendix 'A' build up the unit rate for the following item excavation of trench foundation commencing from ground level and n.c 1.5 deep (per cm) (20 marks)
8. Determine the unit rate for :-
- (a) Plain cements mix 1:3:6 20mm aggregates in foundation manually mixed
- (b) Remain water after removal in foundation trenches using the data in appendix 'A'

APPENDIX 'A'

Contract sum

Central 5mm	-	Ksh.20,000,000.00
20mm & gig pipes	-	Ksh.1500.00
Connection fee	-	Ksh.50,000.00

II

Purchase price for compressor	-	Ksh.1800,000.00
Risk Value after 3 years	-	Ksh.600,000.00
Interest on Capital	-	10% of initial cost
Transport to and from site	-	Ksh.10,000 per year
Maintenance	-	70% of annual depreciation
Hours worked in a 1 hour	-	2000 hours
Fuel consumption 5 litres/hr of diesel @ 110 ksh./litre		
Operator @ 150.00 Ksh/hr		
Labour @ 50.00 Ksh/hr		
Labour constant 6hrs/m ³		

III

Purchase price for pump	-	Ksh.45,000.00
Salvage value after 4 years	-	Ksh.15,000.00
Interest on capital	-	15% of initial cost
Maintenance	-	25% of annual depreciation
Hrs worked in 1 yr	-	1500hrs
Fuel consumption 0.5 litres/hr and disel @ 110ksh/litre		
Fuel consumption 0.25 litres/hr and oil @ 96ksh/litre		

IV

Basic salary per week	-	Ksh.5,000.00
House allowance per week	-	Ksh.300,000
Leave allowance per year	-	Ksh.2,000.00
Car allowance per week	-	Ksh.7,500.00
Bonus on completion of project		15% of profit
Medical allowance per week		Ksh.2,500.00
Cement 50kg bag @ 600/=		
Sand 1 tonne @ 1,000		
Aggts 1 tonne @ 1,500/=		
Cement density	=	1440kg/m ³
Sand density	=	1500kg/m ³
Aggts density	=	1500kg/m ³
Combative & waste	=	30%
Labour @ 50ksh/hr		